Before the
Federal Communications Commission
Washington, DC 200054

In the Matter of	)	
	)	
Services Rules for Advanced Wireless Services in the 2155-2175 MHz Band	)	**WT Docket No. 07-195**
	)	
Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands	)	**WT Docket No. 04-356**

To: The Commission

COMMENTS OF UNITED STATES CELLULAR CORPORATION

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United States Cellular Corporation ("U.S. Cellular"), by its attorneys, submit its comments in response to the Commission's Further Notice of Proposed Rulemaking (FCC 08-158) released June 20, 2008 ("FNPRM) addressing service rules for the Advanced Wireless Services ("AWS") in the 2155-2180 MHz ("AWS-3") band and the "H Block" (1915-1920 MHz, 1995-2000 MHz).

Introduction and Summary

U.S. Cellular strongly supports the FCC's ongoing efforts to make spectrum available for use by both TDD and FDD technologies. U.S. Cellular has built its business on licensed spectrum. We commend the FCC's evident goal of finding creative solutions that allow incumbent and emerging spectrum users to coexist. Ensuring that balance requires reliance on solid data and a recognition of the importance of respecting the significant investments and existing operations of incumbent users. In order to ensure this balance in the instant proceeding, we strongly urge the FCC to require a program of testing to determine how the AWS-2 and

AWS-3 bands may be licensed without interfering with existing PCS, AWS-1 and adjacent channel AWS-2/AWS-3 operations.

Potential interference will be an especially acute problem with respect to AWS-1 and PCS operations. The arguments recently placed in the record by M2Z Networks do not refute the evidence previously placed in the record by U.S. Cellular and other parties demonstrating the extent of interference which will be caused to AWS-1 operations. Also, the FCC's proposal for the H Block (1915-1920 MHz, 1995-2000 MHz) will result in interference to licensed broadband PCS operations.

U.S. Cellular reiterates its position that the FCC should not adopt a nationwide license for AWS-3 operations. Smaller service areas have repeatedly proven their benefits to small and midsized carriers and thus to wireless competition. We, therefore, support the FCC's proposal to license the H Block by BTAs and ask the Commission to license the J Block on a comparable basis in a separate proceeding.

U.S. Cellular, however, strongly opposes the incorporation of M2Z Networks' business plan into the FCC's proposed rules. As a general matter, replicating individual carriers' business plans is contrary to the public interest. Moreover, the proposals for "free" service on a portion of the AWS-3 network and Internet "filtering" of material considered "harmful" to teens are unwise and unworkable.

The FCC should not adopt this proposal and should look to the cellular and PCS services for appropriate and successful models for licensing the AWS-3 spectrum.

I. The Commission Should Adopt Interference Protection Requirements Which Protect Existing PCS Operations and Licensed AWS-1 Spectrum from Harmful Interference.

In prior filings in these proceedings, we have described the complex and controversial interference issues which must be resolved so that the licensing and implementation of the remaining unoccupied commercial spectrum below 3 GHz in the AWS-2 and AWS-3 bands can take place without impairing or precluding existing Broadband PCS, licensed AWS-1 and future adjacent channel AWS-2/AWS-3 operations. We strongly urge the Commission to commit to a program of third party or independent testing to determine appropriate requirements which would prevent interference. The Commission should withhold any final decision in these proceedings until these test results are available. The stakes are high and deserve empirical studies to confirm, at a minimum, that existing service to millions of Americans will not be adversely affected.

1. Interference to AWS-1 Operations. The AWS-3 band (2155-2180 MHz) potentially will interfere with AWS-1 operations at 2110-2155 MHz. This spectrum location presents complex interference challenges which could threaten implementation of new advanced services in the adjacent AWS-1 band by the winners in Auction #66.

Prior submissions in this proceeding by T-Mobile and others have provided strong evidence that deployment of TDD in immediately adjacent spectrum could prevent AWS-1 licensees from making use of at least the AWS-1 F-Block, and possibly the D and E Blocks as well, to provide advanced wireless services.

U.S. Cellular, through its partnership with Barat Wireless, will be directly affected because Barat holds AWS-1 E Block spectrum in the Mississippi Valley REAG acquired in Auction #66.

These complex interference challenges arise because AWS-3 operations are located immediately adjacent to the 2110-2155 MHz portion of the AWS-1 band, which is used for mobile receive. The proposed rules would allow, in the entirety of the AWS-3 band, time division duplex or TDD operations, which provides for mobile transmit and receive on the same frequencies. If the FCC allows mobile transmit in the lower portion of the AWS-3 band, USCC believes that harmful interference to the adjacent channel AWS-1 mobile receivers will be unavoidable.

In its ex parte presentation submitted July 2, 2008 in WT Docket Nos. 07-195, 04-356, 07-16 and 07-30, M2Z Network, Inc. ("M2Z") erroneously claims that harmful interference from AWS-3 to AWS-1 would be rare, easily avoided and limited. We strongly disagree for the reasons presented here:

a. **M2Z Argument** - The Commission provided AWS-1 F block licensees with a 20 MHz block with the requirement to use these large blocks to minimize adjacent channel interference.

   Response -
   Recent interference test results confirm that interference impacts span across not only the AWS-1 F Block but also the AWS-1 D and E Blocks.

b. **M2Z Argument** -
   Current AWS-1 operations rely on CPE which has been deployed with filters that pass through 2110-2180 MHz rather than 2110-2155 MHz.

   Response -
   All filters will have limitations on receiver roll-off that cannot be avoided. AWS-1 devices, even those designed with a 2110-2155 MHz pass-band, will experience interference from AWS-3 devices absent a large guard band and significant restrictions on AWS-3 power levels and out-of-band emissions.

c. **M2Z Argument** - The existence of mutual interference concerns between AWS-1 and AWS-3 provides both sets of licensees with the incentives to cooperate and avoid harmful interference.

Response -
The interference impact of a TDD AWS-3 mobile operating adjacent to a FDD AWS-1 mobile is asymmetric as only the AWS-1 mobile will suffer a performance degradation. As a result, a mutual incentive for both licensees to cooperate and avoid harmful interference will not exist.

d. **M2Z Argument -**
Harmful interference from AWS-3 devices to AWS-1 devices is rare and highly probabilistic so that it can be easily avoided or mitigated without resorting to overly restrictive or technologically biased rules.

Response -
Any interference generated by AWS-3 devices that interfere with an AWS-1 device cannot be avoided simply because it is probabilistic in nature. The simulation and analysis that was completed for M2Z by Alion contained the following fallacies:

- **It assumed that the users were equally randomly distributed within the service area** - Users tend to have some random distribution combined with hot-spots of higher concentration. But there are many areas where the close proximity of users is unavoidable, such as public transportation, stadiums and in buildings.

- **It did not consider interference to in-building users.** In-building users have a much greater chance of close proximity creating harmful interference conditions.

- **It assumed the relative positions of users in the AWS-3 spectrum and AWS-1 spectrum are static.** Even in low mobility situations, the probability of these users being in close proximity and thus generating unacceptable interference, is much higher than M2Z's simulation predicts.

- **It only considered dropped calls** - Not only should dropped calls be considered but interference impacts should be extended to include ineffective attempts, voice quality degradation, capacity reduction, and data throughput degradation.

e. **M2Z Argument -**

M2Z listed several interference mitigation techniques including base station siting, antenna polarization, adaptive antennas, transmitter/receiver improvements, power control, and mobile handover to additional spectrum.

Response -
The M2Z recommendations suggest that the AWS-1 licensees invest a substantial amount of capital to mitigate any interference. The financial cost and implementation burden for the mitigation techniques listed by M2Z is placed solely on AWS-1 licensees. In addition, many of the techniques listed by M2Z would not be effective in mitigating adjacent interference from AWS-3 into the AWS-1 spectrum and would still result in a reduction of the AWS-1 coverage area.

In summary, a large guard band and significant restrictions on power levels and out-of-band emissions (OOBE) in the AWS-3 band would be required to avoid serious interference to AWS-1 devices. As mentioned above, U.S. Cellular, with its partner, Barat Wireless, has made a substantial investment in AWS-1 licenses which the Commission's proposal puts at risk. We urge the Commission to adopt rules that preserve the service objectives of devices in the AWS-1 spectrum.

2. Interference to Broadband PCS Operations. There are also harmful interference issues involving adjacent AWS-2 spectrum, 1915-1920 MHz paired with 1995-2000 MHz ("H-Block") which compound the already complex technical problems surrounding the proposed implementation of operations on this spectrum, which is within 10 MHz of the 1930-1990 MHz PCS band. These issues arise because of 3rd Order Intermodulation interference falling within the PCS B-Block, receiver overload (also called desensitization) interference impairing the ability of a PCS mobile receiver to pick up the desired signal, and OOBE interference.

A laboratory test by PCTest Laboratory, Inc. and the Wireless Information Network Laboratory of Rutgers University, as commissioned and filed in these proceedings by CTIA, was conducted on various handset models from several manufacturers that represented a large sample

of commercial handsets currently in use. The study showed serious interference to PCS operations from nearby operation of H-block mobile units transmitting in the top two-thirds of the H-block while at the maximum power level proposed in the FNPRM. U.S. Cellular has reviewed and concurs with the results of this testing. As reported in these tests (filed in WT Dkt No 04-356 in December of 2004), harmful interference was encountered in the IM tests with H-Block signals. In this case, the H-Block signals were shown to interfere with incumbent PCS handsets operating on the B-Block, at a distance of 8 meters from just one H-Block device transmitting at the +23 dBm limit. It is also possible that multiple H-Block devices may be transmitting within a range of 8 meters. In these cases the H-Block signals can combine and further degrade incumbent PCS operations.

The same studies indicate that H-Block signals also have the potential to cause interference to incumbent PCS handsets operating on all PCS bands (A through F). In receiver overload tests, the results showed interference occurs with a received H-Block at a separation distance of 3.1 meters from H-Block devices transmitting at the +23 dBm limit. In tests at higher temperatures, the results indicate that even more PCS handsets will experience interference

The Commission's proposed power limit for 1915-1920 MHz for H-Band devices, 23 dBm EIRP, is inadequate to mitigate potential harmful interference. We recommend that the Commission impose more stringent limits on the transmitted power of mobile H-block transceivers than those proposed in recent FNPRM.

The Commission's latest proposal for 1915-1920 MHz for H-Band devices to attenuate OOBE by 90 + 10log(P) dB does not satisfy the OOBE problem. The proposed H Block operations will reduce the frequency separation between PCS mobile transmit and receive from

15 MHz to 10 MHz, and H Block mobile transmit in the 1915-1920 MHz band at proposed levels will cause significant interference into the PCS mobile receive band, 1930-1990 MHz.

U.S. Cellular currently operates on broadband PCS A and B Block spectrum in more than fifteen markets which potentially would be subject to significant harmful interference if the Commission's proposed OOBE and power limits were adopted. In its reply comments filed in response to the Commission's September 2004 Notice of Proposed Rulemaking in WT Dkt No 04-356, U.S. Cellular requested adoption of an out-of-band emissions (OOBE) limit for operations in the H Block spectrum that limits emissions into the 1930-1990 MHz PCS receive band to –76 dBm/MHz to address this interference potential.

The Commission has every reason to proceed cautiously where the consequences of a premature and uninformed decision in these proceedings could have unintended adverse consequences for existing broadband PCS subscribers.

II. The Commission Should Not Adopt A Nationwide License and Should Adopt Smaller Services Areas For All AWS Spectrum.

The FNPRM and Section 27.6(h)(5) of the proposed rules attached to it propose an AWS-3 license which would be "nationwide" in scope. U.S. Cellular strongly opposes this proposal.

In the past U.S. Cellular has supported rules that will provide meaningful opportunities for local, rural and regional businesses to win licenses for AWS-3 spectrum. The spectrum should not be subdivided and should be licensed on a CMA basis. We strongly oppose the adoption of nationwide licensing for this spectrum, as proposed in the FNPRM.

As we have described in numerous comments in prior Commission rulemaking proceedings, licensing over smaller geographic areas benefits smaller businesses by lowering the

entry barriers to acquiring a license. In his 2007 testimony before the Committee on Small Business, U.S. House of Representatives, Chairman Martin stated that

> " ...the cost of acquiring spectrum licenses with small geographic service areas is, on average, significantly lower than the cost of acquiring licenses with larger geographic areas. The availability of licenses divided into CMAs and EAs enables smaller wireless providers to fulfill business plans focused on serving smaller, discrete areas of the country, including remote and rural areas. The availability of smaller licenses at auction also allows smaller providers to avoid transaction costs associated with obtaining portions of larger spectrum licenses in the secondary market through partitioning, disaggregation, or leasing." [1]

We agree with this analysis of the benefits of an approach to geographic service selection for the AWS-3 spectrum as an appropriate means to give smaller, rural and regional providers a fair chance to participate in the provision of advanced services in rural as well as non-rural markets.[2] We regret that it was apparently not considered in the FNPRM with respect to the AWS-3 spectrum.

The FNPRM, however, proposes to license the 1915-1920 and 1995-2000 MHz ("H-Block") bands on a Basic Trading Area ("BTA") basis. See proposed Sections 27.6(h)(4) and 27.11(k) of the Rules. U.S. Cellular supports that tentative conclusion. We also support the buildout requirements for the H Block as set forth in proposed Section 27.14(p) of the Rules. Thirty-five percent population coverage within four years and 70 percent coverage within ten years are reasonable requirements.[3]

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[1] See Written Testimony of Chairman Kevin J. Martin before the Committee on Small Business, U.S. House of Representatives dated October 10, 2007.

[2] See also the Commission's Section 257 Triennial Report to Congress Identifying and Eliminating Market Entry Barriers For Entrepreneurs and Other Small Businesses (FCC 07-181) released December 6, 2007, Paras. 64-66.

[3] We would note, however, that the license renewal standard for the H Block as set forth in proposed Section 27.14(e) of the Rules, which separates an evaluation of whether the licensee has provided "substantial service" from whether it has met its performance requirements and otherwise complied with FCC rules does not provide the type of ascertainable and clear standard for license renewal which is necessary to promote necessary network investment. Accordingly, it is not in the public interest. See Joint Comments' of U.S. Cellular and TDS Telecommunications

However, the Commission proposal to expand the AWS-3 license to incorporate the 2175-2180 MHz band will mean the destruction of the "J Block" (2020-2025 MHz, 2175-2180 MHz). Thus, the FCC will not be able to auction it on a BTA basis or indeed on any basis. This will be a considerable blow to small, mid-sized and regional carriers seeking to maintain a foothold in the wireless industry and obtain adequate spectrum to meet their network requirements. Thus, such carriers would have no access to either AWS-3 or J Block spectrum. This would be a profound mistake.

III. The FCC Should Not Adopt Detailed Requirements Incorporating The Proposals of Any One Applicant For AWS-3 Spectrum.

Obviously in response to the proposals of M2Z Networks, the proposed rules for the AWS-3 band attached to the FNPRM contain two extraordinary and unprecedented provisions. They are Section 27.1191, which would require that the AWS-3 licensee devote twenty five percent of its network to "free" service at a "minimum engineered data rate of 768 kbps downstream per user," and Section 27.1193, which would require "filtering" of that "free" spectrum to cleanse it of "obscenity and pornography" as measured by "contemporary community standards" as well as delete "any images or text that otherwise would be harmful [sic] to teens and adolescents." Both proposals are unworkable and are contrary to sound economic principles, the Communications Act, and the First Amendment.

As a general matter, the FCC should not adopt service rules which replicate one carrier's business plan, in part because it will encourage an endless proliferation of self interested spectrum proposals in the future. It also undermines existing rules and legitimate expectations, as well as the principle that spectrum should be put to its highest and best use, as reflected in auction bids and subsequent network development by the high bidder.

Corporation in this docket, filed December 14, 2007, pp. 5-10; Reply Comments, filed January 14, 2008, pp. 5-7 for a more complete discussion of the renewal issue in the AWS context.

Also, there is simply no way to know now whether these requirements would work. It is not clear, for example, whether the idea of requiring free wireless broadband service to end users, at specific "engineered data rates" is economically viable. We believe that once the auction is over, and the required payments have been made, the issue of business models should be left to the market, rather than placing government's hand on the scale prior to the auction.

"Free" service sounds wonderful. But, to paraphrase Milton Friedman, "There is no such thing as free service." It will have to be paid for by revenues from somewhere, either advertising or other AWS-3 customers not receiving "free" service, whose rates will be higher than they would otherwise be, but for a quarter of the network being off limits to "for profit" use. It is possible, of course, that this business model may succeed, though we doubt it. However, to impose it on the sole twenty five MHz nationwide licensee would be too great a risk to take with this valuable spectrum.[4]

Moreover, there is considerable doubt if the FCC has the present authority to impose any form of rate regulation, including a zero rate, on AWS licensees. There is no question that a "zero" rate is a "rate" for FCC purposes. The FCC has regularly evaluated the statutory validity of zero rates in various regulatory contexts.[5] AWS licensees are regulated under Part 27 of the FCC's Rules (Miscellaneous Wireless Communications Services) and are subject to essentially the same eligibility and permissible service requirements as their cellular and PCS competitors. A basic principle of the FCC's regulation of wireless services is that CMRS providers are not subject to rate regulation.[6] The states are forbidden to regulate CMRS rates by Section 332(c)(3)

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[4] Indeed, one of the reasons why the FCC should not create a single nationwide licensee for this uniquely situated spectrum would be precisely to test the viability of different business models.

[5] See, e.g., In the Matter of Application By Verizon New England et al For Authorization To Provide In-Region, Internet Services in Maine, Memorandum Opinion and Order, 17 FCC Rcd 11,659, ¶ 25 (2002).

[6] In the Matter of Telephone Number Requirements For IP-Enabled Services Providers, Report and Order, Declaratory Ruling, Order on Remand, and Notice of Proposed Rulemaking, 22 FCC Rcd 19,531 n.124 (2007).

of the Act[7] and the FCC has never regulated wireless rates, even when there were only two cellular carriers per market, and has repeatedly found that the public interest would be served by deregulation of wireless rates.

To impose rate regulation now, on a new form of competitive wireless service added to all the others, would not only make no sense from a policy perspective, it would require a reasoned explanation of why the twenty year old policy of deregulating wireless rates should be altered. There is no such justification in the FNPRM. Hence, such a rule would not be sustainable on appeal.

The "filtering" section would pose even more insuperable problems. That section ignores the persistent difficulties the federal government has had in regulating "indecency" and even "obscenity" in the non-broadcast context.[8] The language of proposed Section 27.1193(a)(1), which refers to "pornography" and "images or text" that would be "otherwise ... harmful to teens and adolescents" is even more vague and subject to challenge than prohibitions on "indecency."[9]

Under the Ashcroft and CBS cases and those cases cited in them, the proposed language in Section 27.1193(a)(1) would likely be ruled unconstitutional, leaving the filtering requirements in limbo, despite onerous and continuing AWS-3 buildout requirements. Moreover, neither the FNPRM nor the proposed rule pays any attention to Section 223 of the Communications Act, which already deals with indecency and obscenity in the common carrier context, or with the regulations the FCC has adopted to enforce it.[10] That statutory provision, inter alia, permits the transmission of "indecent" material to persons over eighteen with their

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[7] 47 U.S. Code Section 332 (c)(3).
[8] See Ashcroft v. American Civil Liberties Union et al., 124 S. Ct. 2783 (2004).
[9] Moreover, the FCC's existing broadcast indecency policy with respect to "fleeting" material was recently ruled unconstitutional by the U.S. Court of Appeals for the Third Circuit. See CBS Corporation v. FCC, Case No. 06-3575, Slip Opinion released July 21, 2008. The impact of this decision on the FCC's ability to regulate "fleeting" and other types of "indecency" over the Internet could be very considerable.
[10] 47 U.S.C. Section 223; Section 64.201 of the FCC's Rules.

consent. Proposed Section 27.1193(a)(1) would appear to require the AWS-3 licensee to block access to such material for everyone using the free spectrum, including adults, which would also probably not be constitutional.

A serious attempt by the FCC to adopt filtering requirements would engage with Section 223 and with the many appellate cases which have provided at least some guidance to the government in dealing with indecency and obscenity in FCC-regulated media. The FNPRM and proposed rules ignore both the statute and the case law, which itself is an additional reason why this rule is unlikely to be sustained by the courts.

Lastly, the rule does not deal with the huge practical problems of filtering material which someone might later deem "harmful" to "teens" on a network transmitting millions of instantaneous customer generated messages every day. No rational carrier would or could take on such a responsibility, especially concerning content in which it will have no financial interest and will know nothing about.

The business model proposed in those rule sections should not be adopted by the FCC. The FCC should scrap this proposal and adopt flexible rules for the AWS-3 spectrum which reflect the successful development of the cellular and PCS services.

Conclusion

The FCC's technical proposal for both AWS-3 and H Block spectrum will result in interference to AWS-1, PCS, and AWS-2/AWS-3 operations. It is contrary to the public interest and should not be adopted. Also, the AWS-3 band should not be licensed to single nationwide licensee. On the contrary, that band, like the H Block, should be licensed on CMA or BTA basis. Moreover, the proposed AWS-3 rules also reflect the business plan of only one applicant. This is contrary to the public interest in itself. Also, that plan contains unrealistic proposals for "free" service and "filtering" of content allegedly "harmful" to "teens." The FCC should not go

forward with this proposal and should reassess its approach to the AWS-3 band plan and service rules.

Respectfully submitted,

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